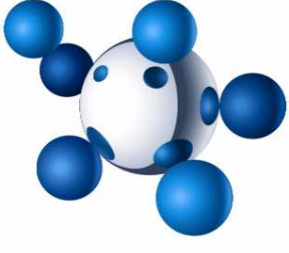




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Coal Value Chain - Simulation Model

19th SAIIE and 35th ORSSA Conference 2005

*Melanie Fourie (Sasol Technology) and Johan Janse
van Rensburg (CSIR)*

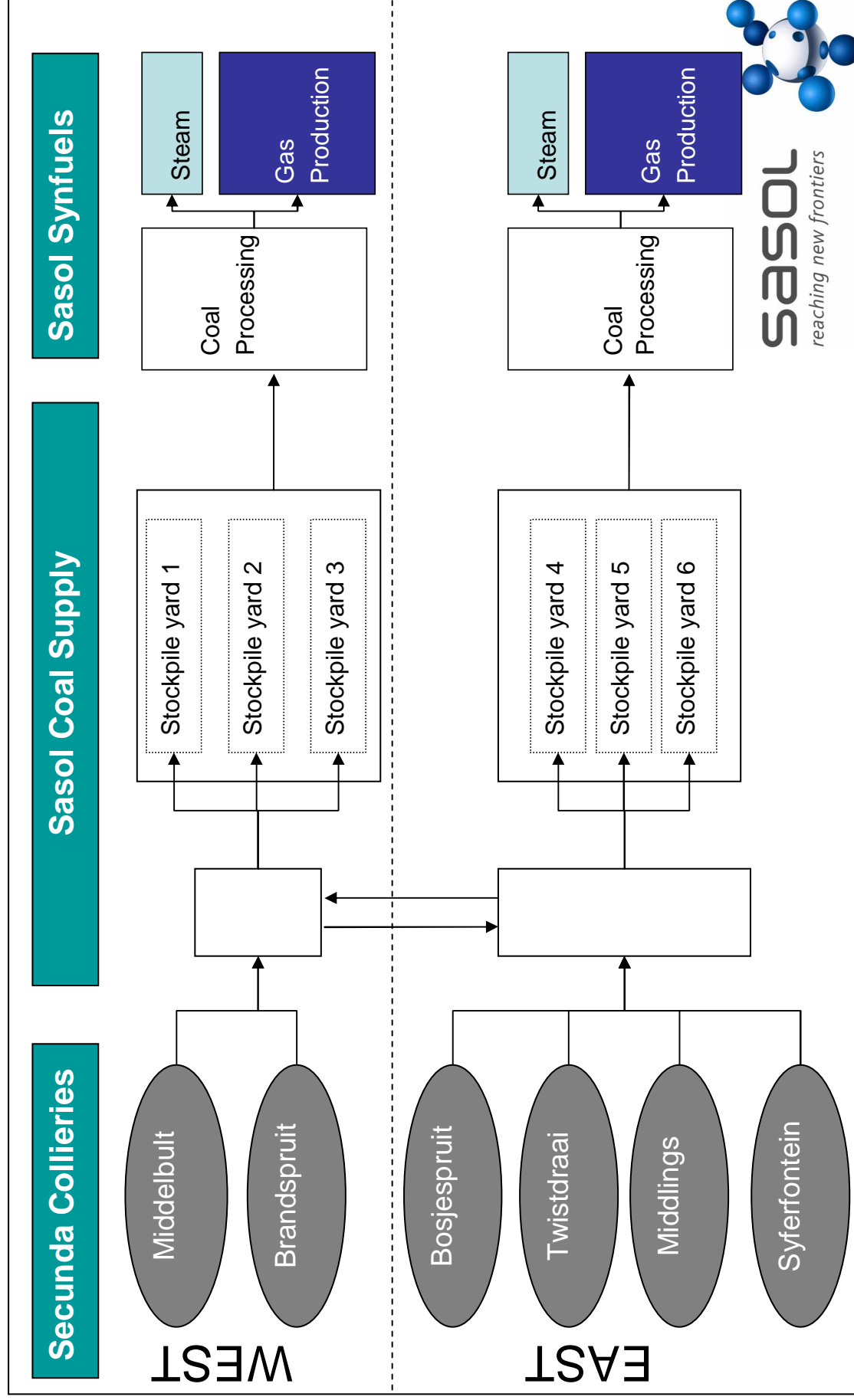
Outline

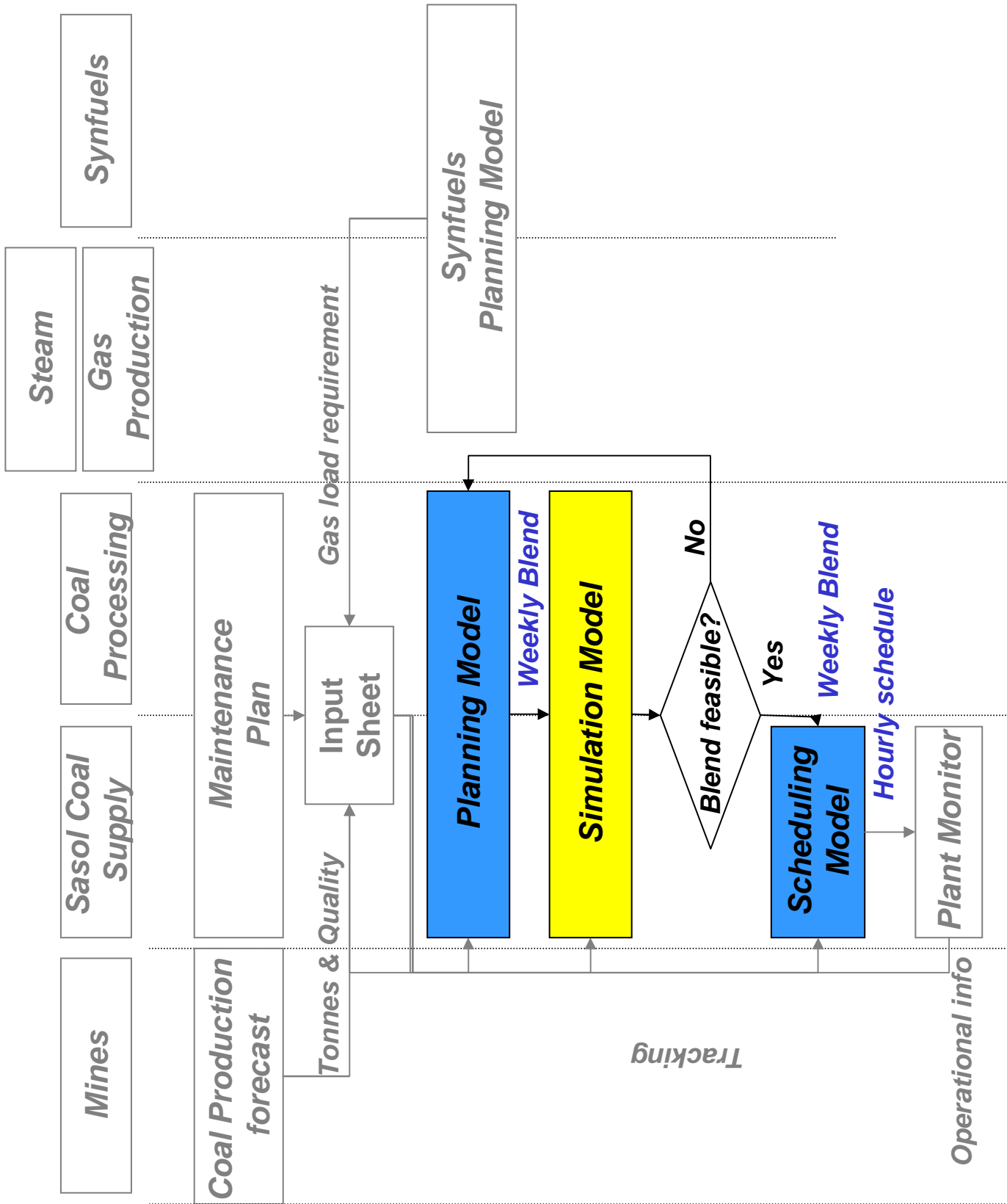
- Background
- Simulation objectives
- Simulation model
 - *Mines*
 - *Blend plan*
 - *Plant Stockpiles*
 - *Stackers and Reclaimers*
 - *Coal Screening*
- Lessons learnt
- “sustainability”



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Coal Value Chain Process





Simulation objectives

- Set of tools to facilitate optimisation of Coal Value Chain
- Integrated, optimised Coal Value Chain
 - *Focus on maximising coal to gas yield*
 - *Supply optimum coal quality*
 - *Optimise operations at Sasol Coal Supply and Coal Processing*
 - *Exploit opportunities of real-time information*
- Simulation model
 - *Blend feasibility*
 - *Infrastructure utilisation*
 - *Capacity and philosophy changes*



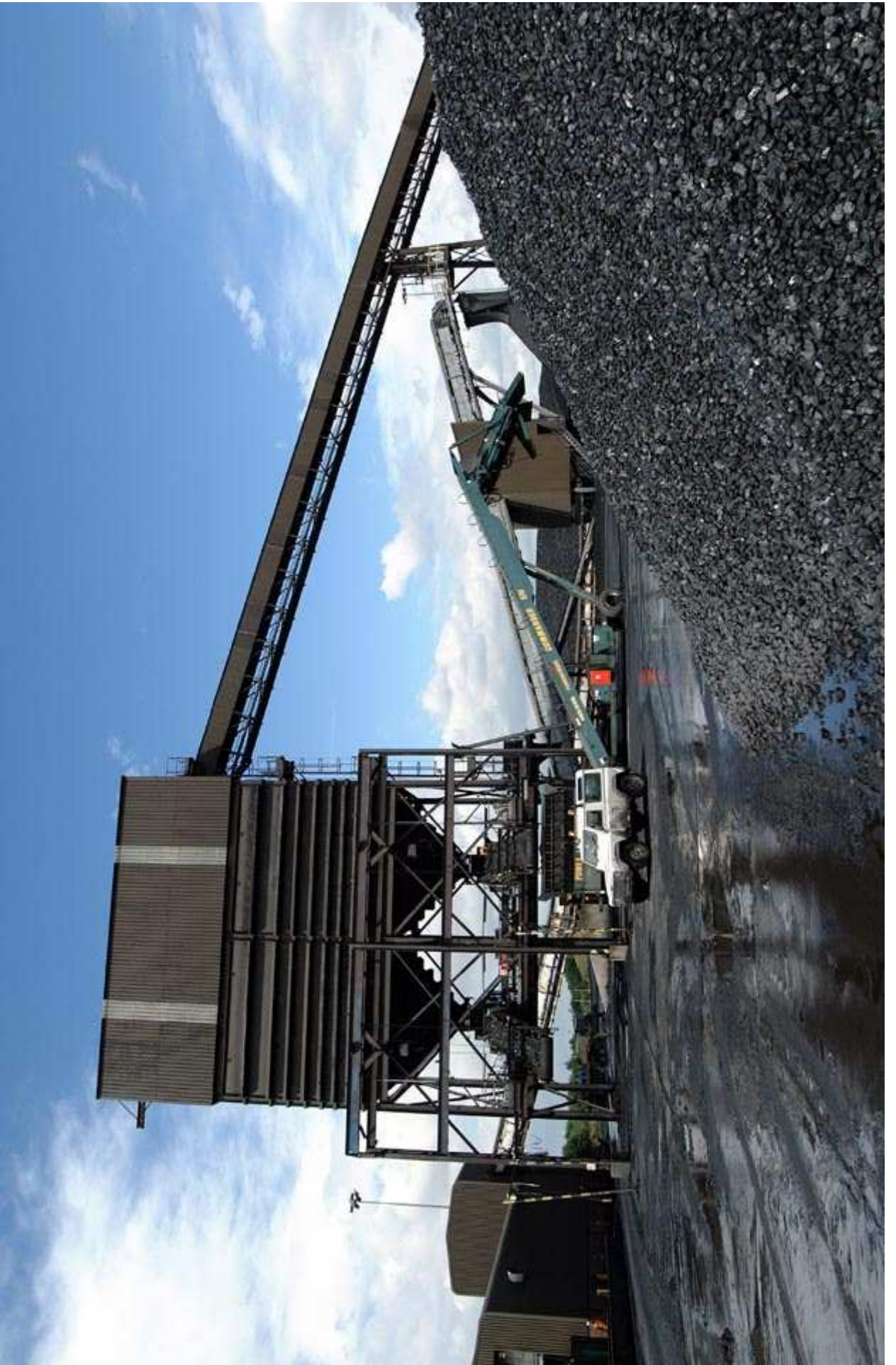
Simulation Model

- Mines
- Produce coal
- Different properties
- Store coal



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Simulation Model (Cont.)

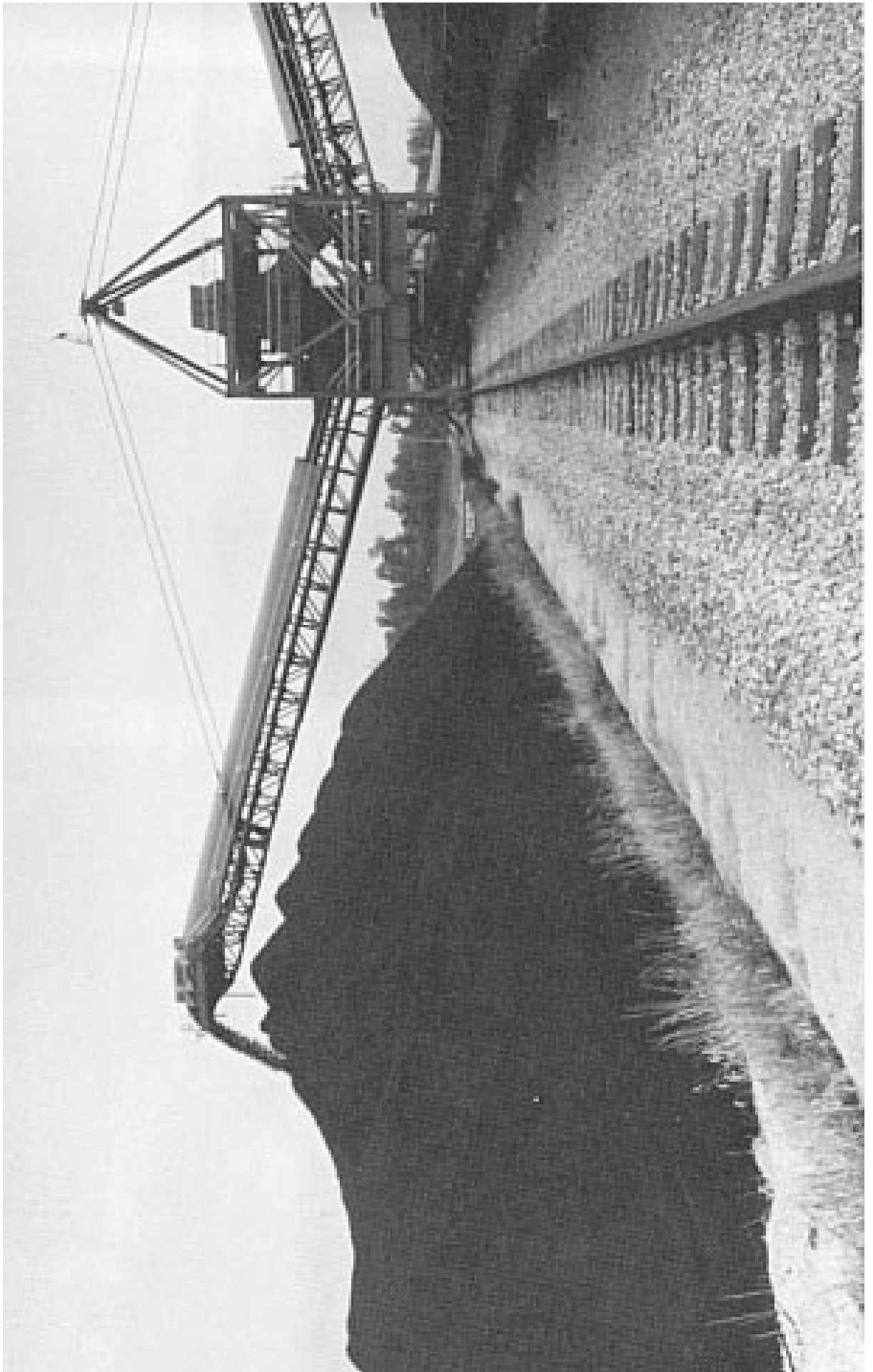
- Blend Plan
 - *Mines produce coal with different properties*
 - *Mix coal*
 - *Uniform product*
- Plant Stockpiles
 - *Stacker*
 - *Reclaimer*
 - *Heaps*
 - *Live, dead-live and dead*



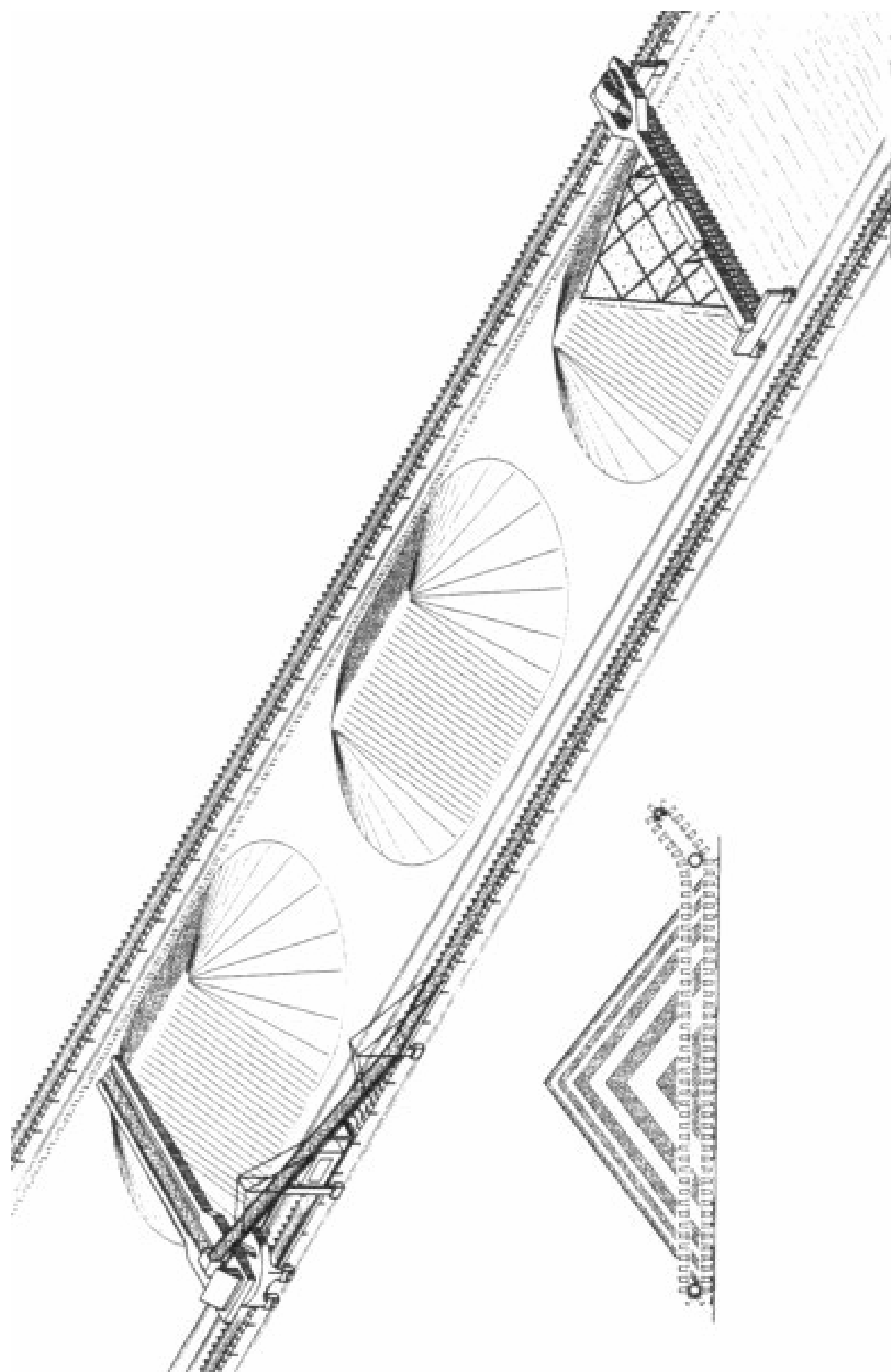
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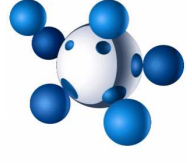
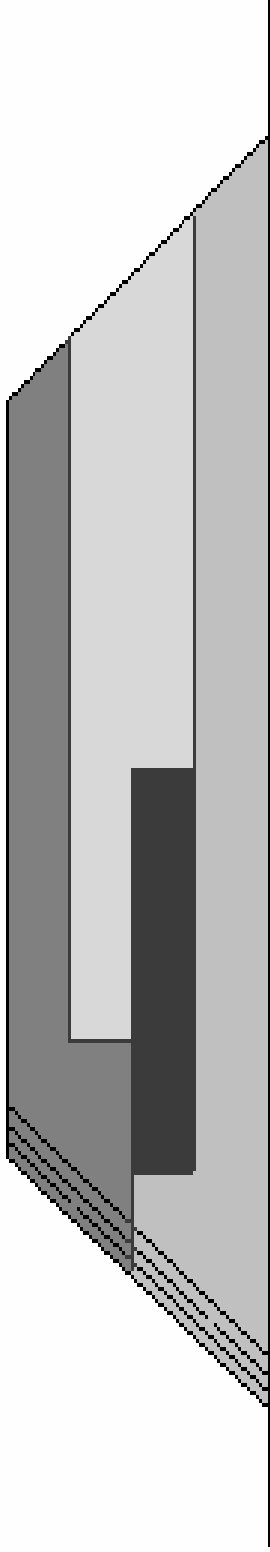
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Stockpile heap



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Simulation Model (Cont.)

- Stacker
 - *Stack coal*
 - *Feed rate*
 - *Rate of moving*
- Reclaimer
 - *Pick-up coal*
 - *Rate of moving*



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Simulation Model (Cont.)

- Front End Loaders



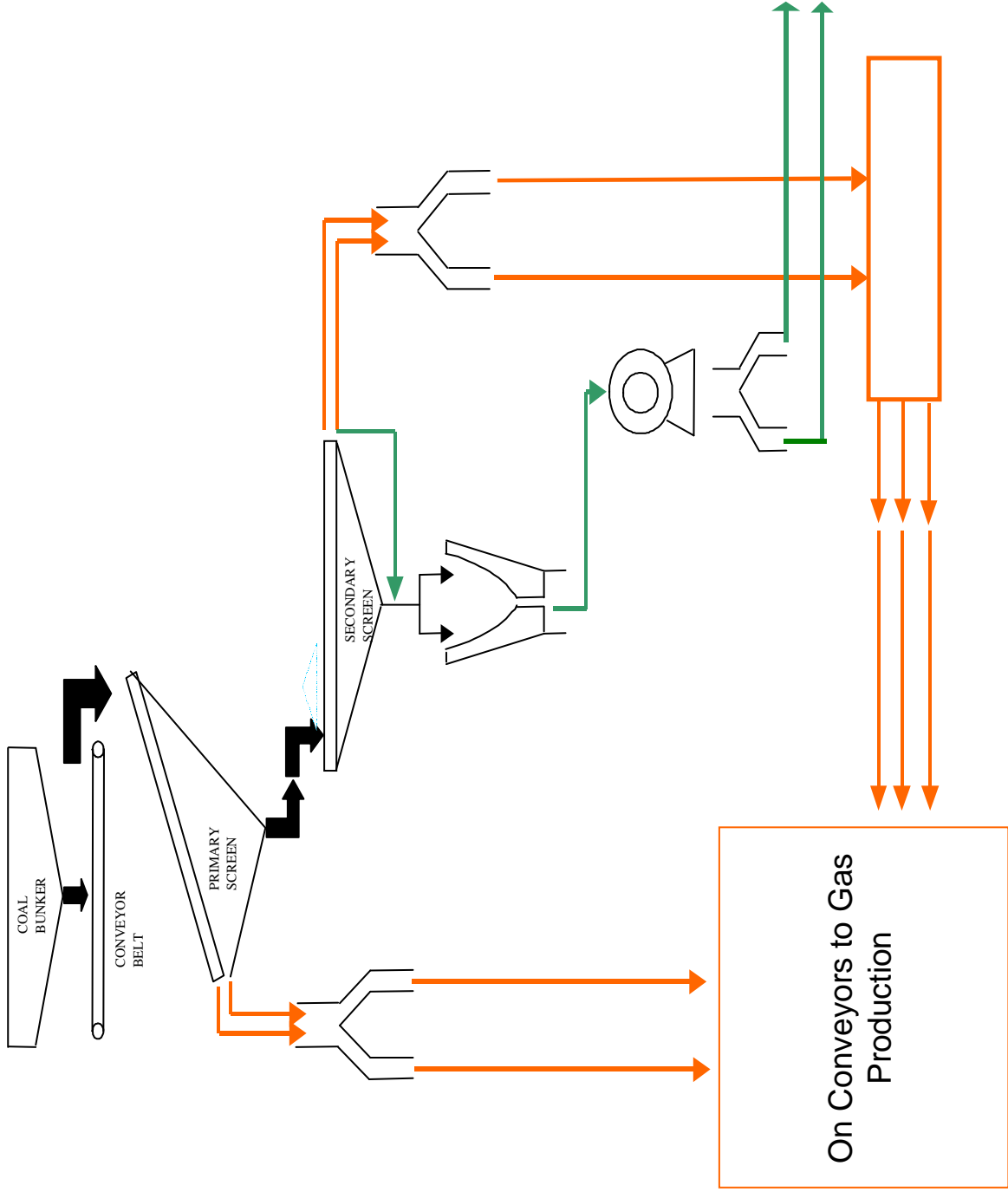
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Simulation Model (Cont.)

- Coal Screening
 - *Separating fine coal from coarse coal*
 - *Conveying to Gas Production*



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Lessons learnt

- Don't underestimate the required detail involved
- Construct logic flow diagrams for operational rules before you start modelling
- Have a close relationship with your client



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“sustainability”

- From then to now
 - *Updates on old distributions*
 - *Data through integrated input sheet with variations*
 - *Update model to current situation*
 - *Testing scenarios*
 - *Expanding on Coal Screening model*



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